



Audibility Of Alarm Systems – (Wiring)

The Building Standards Department issues Builder Tips as part of our customer service program. They are designed to provide an improved understanding of the Building Code and to reduce the costs associated with correcting infractions. Please contact your area building inspector for further information or call the Building Standards Department at 905.475.4848 extension 2189

3.2.4.18. Audibility of Alarm Systems (See Note A-3.2.4.18)

(9) Audible signal devices within a dwelling unit or a suite of residential occupancy shall be connected to the fire alarm system

(a) in a manner such that a single open circuit at one device will not impair the operation of other audible signal devices on the same circuit that serve the other dwelling units or suites of residential occupancy, or

(b) on separate signal circuits that are not connected to the devices in any other dwelling unit, public corridor or suites of residential occupancy. (See Note A-3.2.4.18.(9) and (10))

(10) In a building or part of it classified as a residential occupancy

(a) separate circuits shall be provided for audible signal devices on each floor area, and

(b) audible signal devices within dwelling units or suites of residential occupancy shall be wired on separate signal circuits from those not within suites of residential occupancy or dwelling units. (See Note A-3.2.4.18.(9) and (10)).

(12) Audible signal devices, within dwelling units that are wired on separate signal circuits in accordance with Clause (10)(b) need not include a means for manual silencing as required by sentence (8) provided the fire alarm system includes a provision for the automatic signal silence within dwelling units, where

(a) the automatic signal silence cannot occur within the first 60 s of operation or within the zone of initiation,

(b) a subsequent alarm elsewhere in the building will reactuate the silenced audible signal devices within dwelling units,

(c) after a period of not more than 10 min. the silenced audible signal devices will be restored to continuous audible signal if the alarm is not acknowledged, and



(d) the voice communication system referred to in Article 3.2.4.22. and 3.2.4.23. has a provision to override the automatic signal silence to allow the transmission of voice messages through silenced audible signal device circuits that serve the dwelling units. (See Note A-3.2.4.18.(12))

Appendix A-3.2.4.18.(12) Separate Signal Circuits

Sentence 3.2.4.18.(9) in combination with sentence 3.2.4.18.(10) require separate audible signal circuits for dwelling units. It allows the designer the option to wire the audible signal devices in a dwelling unit on an individual circuit that serves each suite only or to wire the audible signal devices in a common circuit that serves the dwelling units within the floor area and is separate from the circuit that serves the audible devices outside the dwelling unit. Compliance with either of the above two options would meet the intent of a separate circuit required in sentence 3.2.4.18.(12).

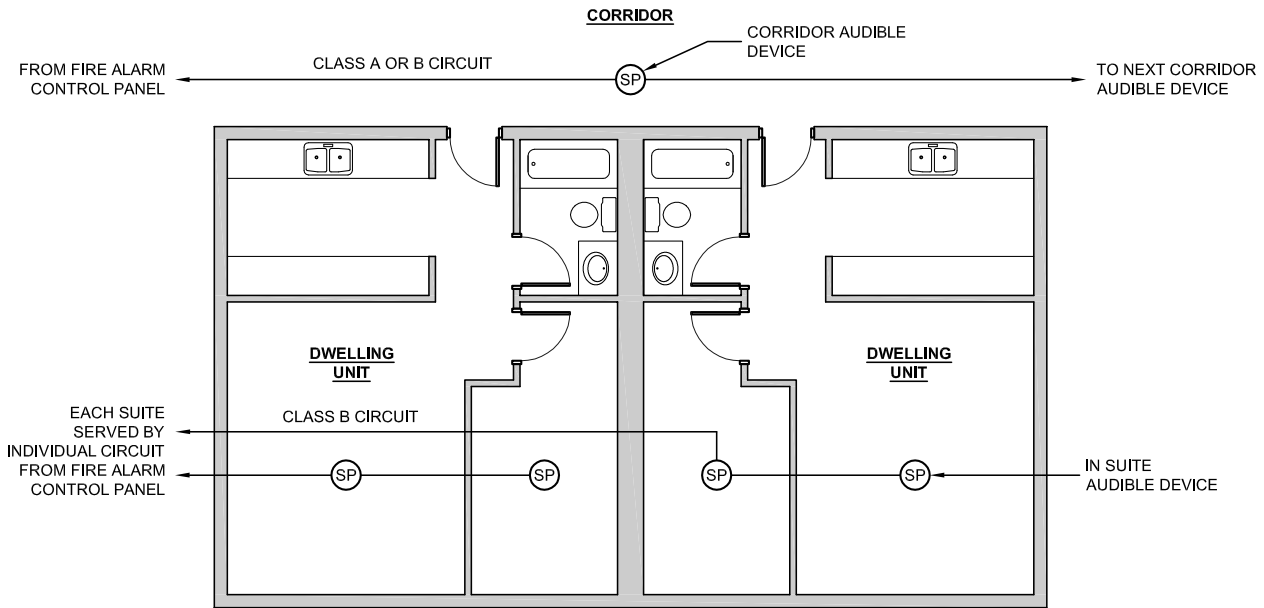
OBJECTIVE

To ensure a life safety system remains secure from compromise the Building Code through Sentence 3.2.4.18.(9) requires that an “open” anywhere in the circuit will permit the other signaling devices on the same circuit to sound. This is in addition to compliance with the CAN/ULC-S524-06, Standard for Fire Alarm Installation, which states that signal circuit fault isolators shall be installed outside of the suite protected by the audible signal device.

Clause 3.2.4.18.(9)(a) permits Class A wiring, or Class B wiring with signal circuit isolators located outside of the suites, to serve audible signal devices within residential suites. Clause 3.2.4.18.(9)(b) permits a separate signal circuit to serve each suite without the need for signal circuit isolators or Class A wiring. Open circuits and Class A and Class B wiring circuits are terms defined in CAN/ULC-S524, “Installations of Fire Alarm Systems.”

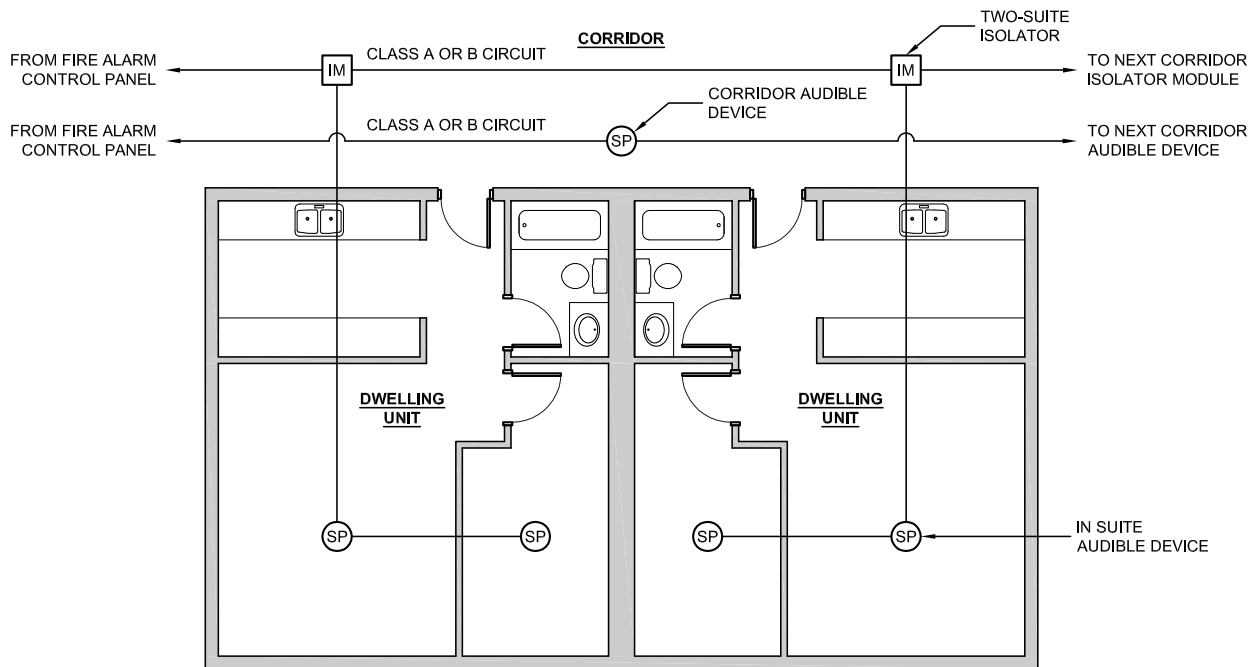
The floor plans below depict the acceptable options for wiring audible signal devices in dwelling units or suites of residential occupancy.

Note: Option Three The building code requires that when audible signal devices in dwelling units are wired in a common circuit (Option three) that serves the dwelling units within the floor area, they are required to be separate from the circuit that serves the devices in the corridor outside of the dwelling units. In order to test that these circuits are installed according to the building code 3.2.4.5.(1) & (2) Installation and Verification of Fire Alarm Systems and CAN/ULC-S524 and CAN/ULC-S537 , a wire-to-wire short circuit fault shall be imposed within each suite in normal (supervisory-non alarm) and alarm conditions. In all cases the wire-to-wire short circuit fault shall not interfere with the ability of the devices in the corridor outside of the dwelling unit to sound in alarm.



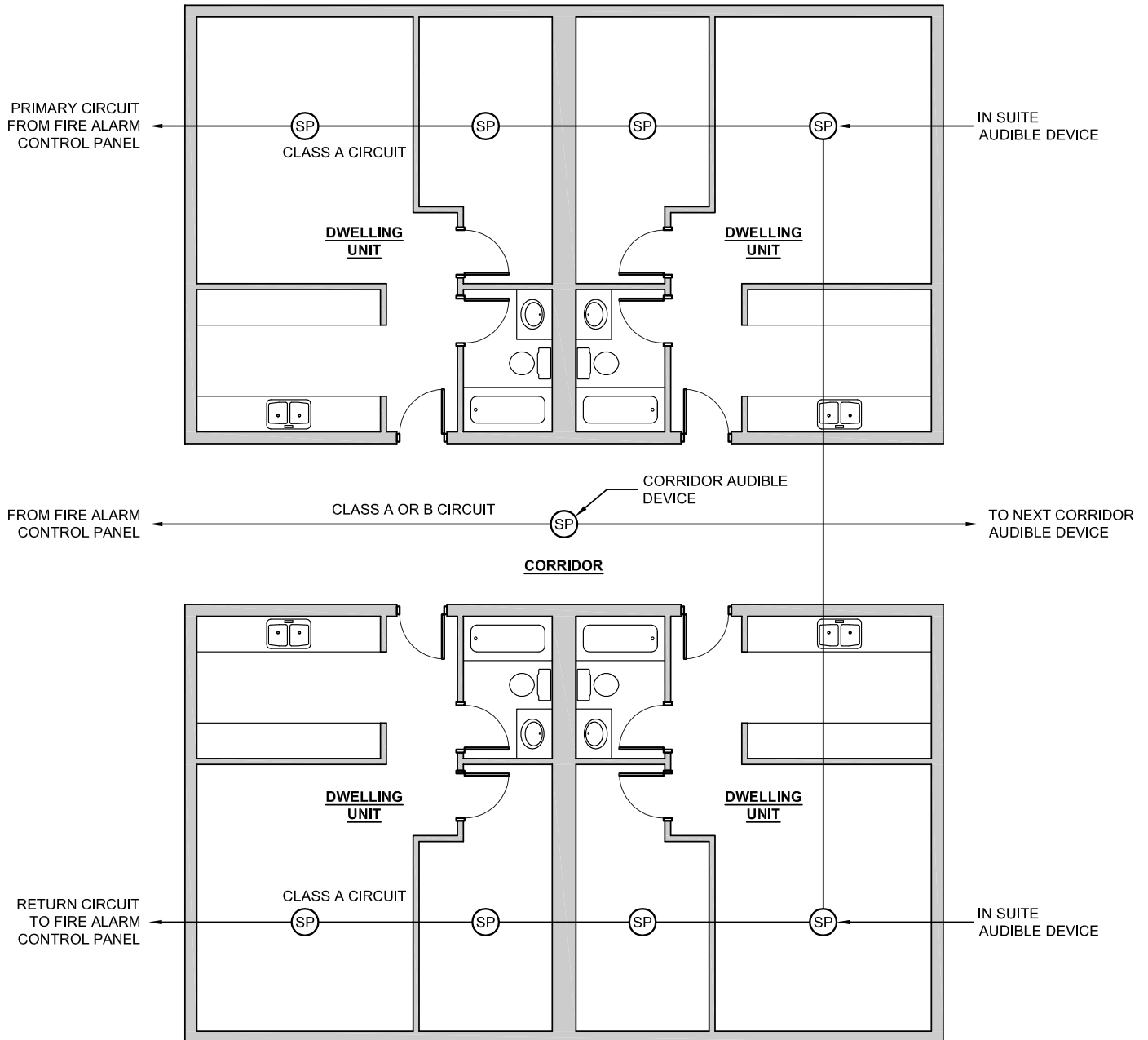
OPTION #1

INDIVIDUAL (CLASS B) IN-SUITE SIGNALING LINE CIRCUITS FOR EACH RESIDENTIAL SUITE OR DWELLING UNIT.



OPTION #2

INDIVIDUAL (CLASS B) IN-SUITE SIGNALING LINE CIRCUITS WITH CIRCUIT ISOLATORS (IM), LOCATED OUTSIDE EACH RESIDENTIAL SUITE OR DWELLING UNIT.



OPTION #3

CLASS A IN SUITE SIGNALING LINE CIRCUITS CONNECTED TO THE FIRE ALARM SYSTEM PANEL.